

THE INFLUENCE OF EMOTION REGULATION ON WELL-BEING, INTERNALIZING
SYMPTOMS, AND DISORDERED EATING AMONG EMERGING ADULTS

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Abstract

Emerging adulthood is a key period for the development of ER, which may set individuals on lifelong trajectories of mental health. Therefore, it is important to understand what components of ER are associated with adaptive and maladaptive outcomes among emerging adults. Using structural equation modelling, the relationships between different components of ER (dysregulation, strategy use, flexibility) and well-being (happiness, flourishing), internalizing symptoms (depression, anxiety), and disordered eating were explored. As expected, dysregulation was related to reduced well-being and greater internalizing symptoms and disordered eating. Reappraisal was positively associated with well-being and negatively associated with internalizing symptoms, while the opposite relationship was found for suppression. Suppression was also linked to disordered eating. ER flexibility was related to well-being for emerging adult men only. Further, dysregulation had the largest effect on all outcomes. The research findings have important implications for researchers, clinicians, and post-secondary institutions and can inform prevention and treatment.

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Introduction

Emotion regulation (ER), or the way individuals use strategies to modulate emotions based on environmental demands, is central to well-being (Aldao, Nolen-Hoeksema, & Schweizer, 2010). While specific ER strategy use and its relationship to psychopathology is well-researched (Aldao et al., 2010), the mechanisms by which ER affects psychological well-being have been overlooked. Furthermore, in recent years researchers have posited that ER flexibility, or the extent to which individuals can choose effective strategies in response to different situations, may be more important for mental health than the frequency of putatively adaptive and maladaptive strategy use (Aldao, Sheppes, & Gross, 2015). Despite the purported importance of ER flexibility there is limited research in this area. The current study sought to understand the ways ER strategy use, abilities, and flexibility relate to psychological well-being and symptoms of mental illness among emerging adults.

Emerging Adulthood

Emerging adulthood is a recently proposed but widely accepted developmental stage, encompassing ages 18 to 29, that describes the developmental period between adolescence and adulthood (Arnett, 2015). In recent decades, significant sociodemographic shifts have transformed the way young people in Western industrialized countries experience their late teens and twenties. Increasingly, young people are attending postsecondary schools and societal attitudes towards premarital sex and cohabitation are generally favourable (Arnett, 2000). As a result, many young people are delaying marriage and parenthood until at least their mid-twenties and often later (Arnett, 2000). Delaying these life events allows young people the opportunities to explore romantic relationships, education, career options, and worldviews. These changes necessitated the conception of a novel developmental stage, and in 2000, Arnett coined the term

emerging adulthood, a period characterized by instability, role experimentation, identity exploration, increasing responsibility for oneself, and decision-making (Arnett, 2000; Arnett, 2015). During emerging adulthood, both psychological well-being and psychopathology increase (Schulenberg & Zarrett, 2006) making it an ideal period to study both mental health and illness.

University Students

Transitioning into postsecondary education involves major developmental transitions to new academic, social, and household environments (Conley, Kirsch, Dickson, & Bryant, 2014). This transition can be disruptive and increase an individual's vulnerability to developing social and psychological problems. Although researchers have focused on the continuity between childhood and adult mental health, Schulenberg, Sameroff, and Cicchetti (2004) propose that mental health during emerging adulthood is critical to the course of later psychopathology. The majority of lifetime mental health problems emerge by age 25 (Kessler et al., 2007) underscoring the importance of mental health during emerging adulthood for later well-being. Moreover, the transition to post-secondary education can contribute to the re-emergence or worsening of subthreshold adolescent mental health pathology, and postsecondary students may be vulnerable to developing new mental health problems due to novel and/or ongoing stressors (Schulenberg et al., 2004). The longer an individual is on a maladaptive developmental trajectory, the more difficult it can be to recover an adaptive pathway (Cicchetti & Cohen, 1995). Thus, there are many reasons to study the mental health of emerging adults.

The majority of Canadian emerging adults obtain some form of postsecondary education (Shaienks & Gluszynski, 2009). As mentioned previously, the adjustment to university can often be difficult. Students need to adapt to the academic and social demands of a new school. Those living away from home for the first time are thrust into increased independence, while those

living at home, frequently must negotiate with family members to gain more autonomy.

University students often struggle with the academic load, finances, and pressures to succeed (Tosevski, Milovancevic, & Gajic, 2010).

University students are vulnerable to experiencing mental health pathology. Among post-secondary students, mental health problems are highly prevalent and seem to be increasing (Eisenberg, Gollust, Golberstein, & Hefner, 2007; Hunt & Eisenberg, 2010). According to a nation-wide survey, nearly one-third of Canadian undergraduates experienced significant psychological distress, and students in Ontario reported more distress than those in other provinces (Adlaf, Gliksman, Demers, & Newton-Taylor, 2001). Furthermore, these Ontario university undergraduate students were more likely to report elevated psychological distress than their counterparts not attending university (42% vs. 17%). Similar findings have been reported by the American College Health Association's large-scale survey of Canadian university students (2016), where some of the most common symptoms students reported experiencing during the prior 12 months were feeling very sad (74%), overwhelming anxiety (65%), and depression (44%) severe enough to impact functioning. Of concern, 13% of students reported seriously considering suicide and 2% say they attempted suicide within the past year. As is true of other age groups, female university students are more at risk of developing mental health pathology than their male counterparts (Said, Kypri, & Bowman, 2013; Weitzman, 2004). Other demographic risk factors for poor mental health among university students include being non-white, low-income, from a family where neither parent attended university, and identifying as bisexual or homosexual (Said & Bowman, 2013; Weitzman, 2004).

Not only are mental health problems among university students increasing, so is the severity of these issues. University counselling centres are reporting sharp increases in the

number of clients with severe psychological problems, including substance abuse, eating disorders, and self-injury (Gallagher, 2014). The current study examined anxiety, depression, and disordered eating as these are some of the most common mental health problems encountered on university campuses (Ozen, Ercan, Irgil, & Sigirli, 2010; Sarokhani et al., 2013; Yager & O'Dea, 2008). Understanding what contributes to mental health problems, such as emotional dysregulation among university students, is key to preventing and treating these issues.

Emotion Regulation

Strategy use. Gross and Thompson (2007) define ER as strategies used to manage emotions, including manipulating the occurrence, duration, intensity, and experience of emotion. According to the process model of ER, regulation can occur at various points in the emotion-generative process (Gross, 1998). Broadly, antecedent-focused ER strategies can be distinguished from response-focused strategies. Antecedent-focused strategies occur before the emotional response has been fully activated and are considered adaptive. One antecedent-focused strategy is cognitive reappraisal, where a person reframes an emotional event to change the emotional experience of it (Gross, 2002). For example, a student could view an upcoming exam as a chance to demonstrate one's knowledge rather than a measure of self-worth to reduce her anxiety. In contrast, response-focused strategies are implemented after the emotional response has been elicited in an attempt to modulate the response and are thought to be less effective. A common response-focused strategy is expressive suppression, where one attempts to inhibit emotionally expressive behaviour (Gross, 2002). An example of suppression is trying to hide one's anxiety from showing when giving an oral presentation. Reappraisal and suppression are both down-regulation strategies that attempt to decrease an emotional reaction. Reappraisal has

been negatively associated with mental health problems, including depression, anxiety, eating disorders, and substance use disorders (Aldao et al., 2010). Conversely, suppression has been positively associated with a wide range of psychological disorders (Aldao et al., 2010). Further, the use of suppression leads to decreased positive emotions (Gross & John, 2003) and poor social outcomes, such as reduced social support and lower likeability (Butler, Lee, & Gross, 2007).

While there is a large extant body of literature on ER and its relationship to mental illness, there is less research on how ER relates to well-being. For example, one meta-analysis on the relationship between ER strategies and mental health reported far more studies examining negative indicators of mental health than positive ones (Hu et al., 2014). As Keyes's dual continua model of mental health (2005) posits, while positive mental health and mental illness are related phenomena, a lack of mental illness is not equivalent with mental health or well-being. This model describes positive mental health as having life satisfaction and happiness (emotional well-being), positive individual functioning (psychological well-being), and positive societal functioning (social well-being; Westerhof & Keyes, 2010). Most of the research on strategy use and positive emotion examines positive affect rather than happiness. While related, positive affect is a distinct construct from happiness, as the former measures the current or recent experience of positive states (e.g., active, attentive, interested; Watson, Clark, & Tellegen, 1988) rather than overall subjective happiness (Lyubomirsky & Lepper, 1999). However, the limited body of research suggests that reappraisal is positively related to well-being while suppression is negatively related to well-being (Hu et al., 2014). For example, reappraisal was found to be positively associated with life satisfaction and positive affect (Balzarotti, Biassoni, Villani, Prunas, & Velotti, 2016; Cabello, Salguero, Fernández-Berrocal, & Gross, 2013; Esmaeilinasab, Andami Khoshk, & Makhmali, 2016), while suppression was negatively associated with these

outcomes (Cabello et al., 2013; Cameron & Overall, 2017; Haga, Kraft, & Corby, 2009). In contrast, Ioannidis and Siegling (2015) reported that reappraisal was associated with high positive affect and low negative affect, but suppression was only associated with low positive affect. Reappraisal and suppression are the two most commonly studied putatively adaptive and maladaptive strategies respectively; however, there is little research on these strategies and positive outcomes. The present study sought to better understand how these strategies relate to happiness and flourishing, and if strategy use is as important for well-being as it is for symptoms of mental illness.

Dysregulation. While the research based on the process model of ER typically examines habitual use of ER strategies, the ability-based model of ER offers a broader perspective (Naragon-Gainey, McMahon, & Chacko, 2017). This approach emphasizes the extent to which an individual adaptively responds to negative emotional states (Gratz & Roemer, 2004). These abilities include emotional awareness and clarity, acceptance and tolerance of emotions, ability to engage in goal-directed behaviour when experiencing negative emotions, and flexible access to a wide range of ER strategies (Gratz & Roemer, 2004; Tull & Aldao, 2015). Deficits in these areas lead to emotional dysregulation. Emotion dysregulation, or difficulties with ER, is theorized to be a transdiagnostic feature of many mental health problems (Barlow, Allen, & Choate, 2004; Norton & Paulus, 2016) and has been shown to be related to a host of maladaptive outcomes, including anxiety (Turk, Heimberg, Luterek, Mennin, & Fresco, 2005), depression (Ehring, Fischer, Schnulle, Bøsterling, & Tuschen-Caffier, 2008), eating disorders (Harrison, Sullivan, Tchanturia, & Treasure, 2010), borderline personality disorder (Glenn & Klonsky, 2009), and low adaptive functioning (Bradley et al., 2011). Furthermore, difficulties with ER decrease following treatment for anxiety, depression, eating disorders, substance use, and

borderline personality disorder, indicating the central role of emotion dysregulation transdiagnostically (Sloan et al., 2017). As with strategy use, there is a lack of research on difficulties with ER and well-being. Targeting ER difficulties is an effective treatment for mental health problems (Renna, Quintero, Fresco, & Mennin, 2017). Knowing whether dysregulation is also related to well-being could help inform positive mental health programming to promote well-being among emerging adults. Also, to better understand the complexities of ER, the present study included measures informed by both the process and abilities models of ER. Rather than being mutually exclusive, Tull and Aldao (2015) recently proposed that the two models of ER are interrelated and ER research should integrate both to better capture the complex construct of ER.

ER Flexibility. While flexible regulation based on contextual demands is central to the abilities model, ER researchers using the process model have become increasingly interested in the role of context in adaptive ER. For example, Troy, Shallcross, and Maus (2013) found that high use of reappraisal was related to lower levels of depression when individuals were faced with uncontrollable stress, but the opposite relationship was found in situations of controllable stress. Similar results were reported by Haines and colleagues (2016), where individuals with higher well-being used reappraisal more often in uncontrollable situations and less often in controllable situations. While suppression is related to a host of negative social outcomes, some researchers have observed that suppressing the expression of emotion is actually adaptive in some social situations (Haga et al., 2009). Studies such these have shifted recent theory and research on ER from examining adaptive and maladaptive strategies to emphasizing the importance of flexible regulation, or the ability to choose an appropriate strategy for the given context. An important component of flexible ER is an individual's repertoire of strategies (i.e.,

the range of ER strategies available and the extent to which an individual employs them; De France & Hollenstein, 2017). Preliminary research suggests that the ability to flexibly regulate emotions may be an important adaptive skill to help manage stressful life events and difficult emotions (Aldao et al., 2015). For example, a recent study by Levy-Gigi and colleagues (2016) found ER flexibility played an important role in how individuals respond to trauma. About half the time, ER involves modifying emotional expressions of the face, voice, and body language (Gross, Richards, & John, 2006). Regulating expressive behaviour involves both up-regulation (i.e., increasing emotionally expressive behaviour) and down-regulation (i.e., decreasing emotionally expressive behaviour (Gross et al., 2006). One element of ER flexibility is the ability to both enhance and suppress positive and negative emotional expression depending on the circumstances. The ability to regulate emotional expression allows one to conform to cultural display rules (Matsumoto, Yoo, & Fontaine, 2008), and has an important role in social interactions (Gross et al., 2006). Bonanno, Papa, Lalande, Westphal, and Coifman (2004) found that first-year university students who were better able to enhance and suppress emotional expression were better adjusted after two years of university. Similarly, Côté, Gyurak, and Levenson (2010) found individuals who are better able to up- and down-regulate expressions of emotion reported greater well-being and higher socio-economic status. While a flexible response to situational demands is a central component of both major ER models, there is limited research on ER flexibility and how it relates to both positive and negative mental health outcomes. Given the central role of flexibility in adaptive ER, this is an area where more research is needed.

Emerging adulthood may be a developmental period where ER becomes more flexible as individuals gain more insight into their own and other's emotions (Zimmermann & Iwanski, 2014). In moving from adolescence to adulthood, emerging adulthood is a time where

individual's increasingly set and pursue goals (Shulman & Nurmi, 2010). At its core, ER is a goal-driven activity (Mauss & Tamir, 2015). Individuals choose how and when to modulate their emotions based on specific goals (e.g., less sadness, getting along with others, task completion; English, Lee, John, & Gross, 2017). Further, compared with adolescence, emerging adulthood is characterized by increased adaptive individual and interpersonal ER (Zimmermann & Iwanski, 2014), indicating increasing ER flexibility may be an important component of adaptive functioning in emerging adulthood.

Sex differences. There are known sex differences in ER. Women are more likely than men to engage in most ER strategies, including reappraisal (Tamres, Janicki, & Helgeson, 2002); however, emerging adult men engage in suppression more often than their female counterparts (Meyer, Smeets, Giesbrecht, & Merckelbach, 2012). The greater use of strategies by women may be because women experience more distressing emotions that require regulation (Nolen-Hoeksema, 2012). As compared to male university students, female students tend to report experiencing more negative emotions, disclose their feeling more frequently, cry more often, and show more nonverbal displays of emotion (Timmers, Fischer, & Manstead, 1998). In addition, women may appraise adverse events as more stressful and experience greater affect intensity than men (Nolen-Hoeksema, 2012). Women also tend to be more aware of their own and others' emotions, as well as understand emotions better than men (Nolen-Hoeksema, 2012). In contrast, men may engage in ER in a more automatic manner. One fMRI study found that while reappraisal worked equally well for men and women, for men, the strategy required less prefrontal cortex activity and a greater reduction of activity in the amygdala indicating less effort was required for more emotion modulation (McRae & Ochsner, 2008). In summary, women are

more aware of their emotions, have more intense emotions, use more ER strategies, while men tend to use more suppression and may engage in more nonconscious ER.

The few studies that have examined sex as a moderator between ER and psychosocial outcomes report mixed findings. One study found suppression was related to depression in men but not women (Flynn, Hollenstein, & Mackey, 2010). Other studies reported no significant sex interaction on the relationship between the ER strategies of suppression (Kwon, Yoon, Joormann, & Kwon, 2013) and reappraisal (Garnefski, Teerds, Kraaij, Legerstee, & van den Kommer, 2004; Kwon et al., 2013), and depressive symptoms or daily positive and negative affect (Brockman et al., 2017). Masumoto, Taishi, & Shiozaki (2016) reported reappraisal to be more strongly related to positive and negative affect for men than women; however, this interaction was not found for reappraisal and positive and negative moods individually. Finally, preliminary research suggests that ER flexibility may not vary between the men and women (Aldao & Nolen-Hoeksema, 2012; Gupta & Bonanno, 2011). It is possible that sex differences in ER may contribute to discrepancies in mental health outcomes. For example, as compared to men, women are at significantly greater risk of experiencing an anxiety or mood disorder (Kessler et al., 2005). Thus, there is a need for more research to better understand potential sex differences in the link between ER and outcomes.

Theoretical Frameworks

Two complementary theoretical frameworks were used to inform this research, developmental psychopathology and positive psychology.

Developmental psychopathology. Developmental psychopathology is an approach to studying mental illness across the lifespan. This perspective highlights the importance of individual vulnerabilities and environmental risk factors that contribute to the development of

maladaptive cognitions, emotions, or behaviours (Sameroff, 2000). Normal development is also studied, as atypical development can only be fully understood within the context of typical development (Rutter & Sroufe, 2000). This approach also considers the role of protective factors in helping to promote adaptive functioning or ameliorate maladaptive outcomes (Rutter, 1987). At every stage, healthy development is seen as successfully gaining competence in multiple domains, including social, emotional, and cognitive areas. Within this framework, development is seen as hierarchical, where each stage of development is dependent on previous stages. Therefore, an individual who struggles to meet a developmental challenge may use maladaptive coping strategies which become part of a problematic system, impacting the way other systems are organized (Cicchetti & Cohen, 1995). Even though these individuals may appear competent, they will be vulnerable when these systems are challenged at a later developmental stage. This theory is aligned with the previously mentioned finding that the stressor of transitioning to university can cause the re-emergence of previous psychopathology (Schulenberg et al., 2004) and underscores the importance of better understanding this stage to prevent ongoing problems. Developmental psychopathology offers a useful perspective for understanding how risk and protective factors (e.g., dysregulation, ER flexibility) lead to adaptive (i.e., flourishing, happiness) and maladaptive (i.e., internalizing symptoms, disordered eating) outcomes; however, this approach tends to focus on pathology and adverse outcomes. As this study also examined what components of ER foster positive outcomes, adding a framework that emphasizes understanding factors that contribute to well-being, such as positive psychology, is informative.

Positive Psychology. Positive psychology is an emerging field of study that shifts the focus away from psychopathology and emphasizes positive aspects of mental health, such as character strengths, happiness, and optimal functioning (Peterson & Seligman, 2004; Seligman

& Csikszentmihalyi, 2000). It can be defined as the study of positive experiences and individual characteristics, as well as the settings that allow positivity to flourish (Duckworth, Steen, & Seligman, 2005). This study sought to understand how ER contributes to two key aspects of psychological well-being, flourishing and happiness.

According to the dual continua model of mental health proposed by Keyes (2007), mental health exists on a separate continuum from mental illness. While the two dimensions are related, the absence of mental illness does not necessarily equate with mental health. Keyes describes good mental health as flourishing and poor mental health as languishing. One can have a mental illness, yet be living a full, meaningful life, or conversely, someone without a mental illness may be languishing. Flourishing is defined as both positive feelings and positive psychosocial functioning (Keyes et al., 2008). More specifically, flourishing encompasses emotional well-being (i.e., positive affect, quality of life), positive psychological well-being (i.e., self-acceptance, personal growth, life purpose, mastery of environment, autonomy, positive relations with others), and social well-being (i.e., social acceptance, social actualization, social contribution, social coherence, social integration; Keyes, 2007). According to a positive psychology approach, to fully capture mental well-being, both mental health and psychopathology should be assessed. The dual continua model has been validated cross-culturally (Keyes et al., 2008; Westerhof & Keyes, 2010), as well as among Canadian university students (Peter, Roberts, & Dengate, 2011). Peter and colleagues (2011) found students who were flourishing reported fewer symptoms of depression and anxiety, as well as better physical health. Few studies examining the relationship between ER and flourishing directly have been undertaken; much of the research has operationalized flourishing as positive affect (Barber, Bagsby, & Munz, 2010) or happiness (North, Holahan, Carlson, & Pahl, 2014). Two studies

reported the ability to maintain goal-directed behaviour while experiencing negative emotions partly mediated the relationship between mindfulness and psychological well-being, including flourishing (Coffey, Hartman, & Fredrickson, 2010; MacDonald & Baxter, 2017).

Not just a common goal, happiness is central to positive mental health and well-being (Lyubomirsky, King, & Diener, 2005; Norrish & Vella-Brodrick, 2008). As Lyubomirsky and colleagues (2005) reported, happiness is related to work success, better physical and mental health, and social relationships. Happiness can be simply defined as frequent positive affect (Lyubomirsky et al., 2005), although often infrequent negative affect and a high level of life satisfaction are added to the definition (Diener, Suh, Smith, & Shao, 1995). The few studies that examined ER strategies and happiness suggest that savouring positive experiences increases happiness (Hurley & Kwon, 2013; Jose, Lim, & Bryant, 2012). Unlike reappraisal and suppression, savouring is an up-regulation strategy aimed at increasing an emotional experience. One study examined suppression and happiness and found no significant relationship (Quoidbach, Berry, Hansenne, & Mikolajczak, 2010), while another reported that suppression, but not reappraisal was associated with happiness and psychological well-being (Páez, Mendiburo Seguel, & Martínez-Sánchez, 2013).

Summary

This study aims to increase understanding of the ways ER influences mental health functioning among emerging adults by incorporating both the process model and the abilities model of ER. Preliminary research suggests that ER flexibility is adaptive; however, more research is needed on how flexibility relates to specific outcomes. Further, while emerging adulthood may be a prime period for the development of flexibility, few studies have focused on this population. The proposed study will examine whether ER flexibility is an important

component of adaptive ER in this population. Further, while little is known about sex differences in the relationships between ER and psychosocial outcomes, it's possible that these may explain differing mental health outcomes between men and women. This study sought to illuminate possible sex differences. As both developmental psychopathology and positive psychology approaches inform this research, the results allow for a fuller understanding of contributing factors to mental health and mental illness among emerging adults.

The Current Research Project

The overarching goal of this study is to understand how ER relates to well-being, internalizing symptoms, and disordered eating among emerging adults. The current study aimed to contribute to the larger body of literature on ER by incorporating both major ER models, examining strategy use and dysregulation, as well as flexibility. In addition, positive psychology informed this study, and well-being was included as an outcome. Furthermore, the majority of research on ER and outcomes involves simple models with one or two predictors (e.g., suppression and reappraisal). Therefore, there is a need for more complex models to better understand the relative influence of different components of ER on both adaptive and maladaptive outcomes. The present study tested a hypothesized path model of the influence of various components of ER on psychological well-being, internalizing symptoms, and disordered eating among emerging adults. Further, the role of sex was included, as while there are known sex differences in ER, there is little research on how sex differences may influence outcomes.

Objectives

The overall goal of the proposed study was to gain insight into the ways components of ER differentially contribute to various outcomes, including psychological well-being and mental illness among emerging adults. The main objectives of the study were:

- 1) To examine the relationships between different components of ER (i.e., dysregulation, strategy use, and flexibility) and (a) well-being, namely happiness and flourishing, and (b) symptoms of mental illness, including internalizing symptoms (depression and anxiety) and disordered eating.
- 2) To better understand the relative influence of different components of ER on psychosocial outcomes.
- 3) To better understand sex differences in the relationship between ER and well-being and mental illness.

Hypotheses

The following hypotheses relate to the above objectives:

- 1) With respect to the first objective, it was anticipated that the use of reappraisal and ER flexibility would be related to more adaptive outcomes (i.e., increased well-being and decreased internalizing symptoms and disordered eating), while the use of suppression and difficulties regulating emotions would be related to maladaptive outcomes (decreased well-being and increased internalizing symptoms and disordered eating).
- 2) With respect to the second objective, it was anticipated that dysregulation would have a greater effect on maladaptive outcomes than strategy use or flexibility. Given the lack of research, there were no other specific hypotheses for this objective.
- 3) With respect to the third objective, due to the exploratory nature of the research, there were no specific hypotheses for how the models might vary by sex.

Method

Sample

Seven hundred and twenty-eight students enrolled in this study. One hundred and fifteen students were excluded due to complete missing data or for completing the study in less than 10 minutes. A single student was excluded due to identifying as intersex. The final study participants included 612 emerging adults studying at a large urban university in Ontario, Canada (75.8% female, $M_{\text{age}} = 20.24$, $SD_{\text{age}} = 2.23$, age range = 16.8 – 29.86). In terms of ethnicity, one hundred and eighty-three participants identified as White/Caucasian (29.9%), 155 identified as South-Asian (25.3%), 98 identified as Asian (16.0%), 68 identified as Middle-Eastern (11.1%), 55 identified as Black (9.0%), 13 identified as Latino-Hispanic (2.11%), one identified as Indigenous¹ (0.2%), 38 identified as other (6.2%), and one did not specify ethnicity (0.2%). Four hundred and twenty-three students (69.1%) were born in Canada. The 188 students born outside Canada (30.7%) identified 44 different countries of origin, the most common being Pakistan (26 students, 4.2% of all students), Iran (22 students, 3.6%), and India (17 students, 2.8%). Three hundred and six participants were in first year (50.0%), 124 in second year (20.4%), 95 in third year (15.5%), 59 in fourth year (9.6%), and 27 reported “other” (4.4%). The majority (516 students, 84.3%) lived at home with a parent or guardian, while 63 students lived

¹ The questionnaire used the term Aboriginal; however, Indigenous is now the preferred term.

on their own off campus (10.3%), 29 students lived in residence (4.7%), and four chose other (0.7%).

Measures

Demographic information. Demographic information, including age, sex, and ethnicity was collected from each participant (see Appendix C).

Emotion Regulation. ER was evaluated through questionnaires assessing frequency of ER strategy use, difficulties with ER, and ER flexibility.

Emotion Dysregulation. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) was administered (see Appendix D). The DERS is a 36-item measure that assesses emotion dysregulation across six domains: 1) lack of emotional awareness (e.g., “I pay attention to how I feel”), 2) lack of emotion clarity (e.g., “I am confused about how I feel”), 3) nonacceptance of negative emotions (e.g., “When I’m upset, I feel guilty for feeling that way”), 4) limited access to effective ER strategies (e.g., “When I’m upset, it takes me a long time to feel better”), 5) difficulties managing impulsive behaviours when experiencing negative emotions (e.g., “When I’m upset, I feel out of control”), and 6) difficulties engaging in goal-directed behaviours when experiencing negative emotions (e.g., “When I’m upset, I have difficulty getting work done”). Each item is rated on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). Higher scores indicate greater emotion dysregulation. The DERS has high internal consistency (Cronbach’s $\alpha = .93$), adequate test-retest reliability, and adequate construct, convergent, and discriminant validity (Gratz & Roemer, 2004). The psychometric properties of the DERS scale have been demonstrated to be consistent among a diverse sample of adults (Ritschel, Tone, Schoemann, & Lim, 2015). The scale was found to have good reliability in the current study (Cronbach’s $\alpha = .94$).

Strategy Use. The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) was used as a measure of ER (see Appendix E). The ERQ measures individual differences in the habitual use of two key ER strategies: *cognitive reappraisal* and *expressive suppression*. The cognitive reappraisal subscale has six items (e.g., “I control my emotions by *changing the way I think* about the situation I’m in”), whereas the expressive suppression subscale consists of four items (e.g., “I keep my emotions to myself”). The items are rated on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Each subscale is evaluated using mean scores. Higher scores in each subscale indicate greater usage of the strategy. The ERQ has acceptable psychometric properties based on strong internal consistency (reappraisal, Cronbach’s $\alpha = .80$; suppression, Cronbach’s $\alpha = .70$), and test-retest reliability for both categories (Gross & John, 2003). In the present study, both the reappraisal scale (Cronbach’s $\alpha = .83$) and the suppression scale (Cronbach’s $\alpha = .78$) demonstrated good internal consistency.

Emotion Regulation Flexibility. The final ER measure was the Flexible Regulation of Emotional Expression Scale (FREE; Burton & Bonanno, 2016; see Appendix F). The FREE is a 16-item scale that measures an individual’s ability to enhance and suppress both positive and negative emotions across a variety of hypothetical scenarios. It has a two-factor structure: expressive enhancement ability and suppression ability. Each item is rated on a 6-point Likert scale ranging from 1 (*unable*) to 6 (*very able*). An overall flexibility score is calculated by subtracting the absolute value of the difference between the enhance and suppress subscale scores (i.e., a polarity score) from the total score (obtained by adding the enhance and suppress subscale scores). Higher scores indicate greater ER flexibility. In the present study, the internal consistency was acceptable for both subscales (enhancement, Cronbach’s $\alpha = .80$ and suppression, Cronbach’s $\alpha = .70$), and the FREE scale has adequate discriminant and

convergent reliability (Burton & Bonanno, 2016). This questionnaire was found to have good reliability for both the enhancement (Cronbach's $\alpha = .82$), and suppression (Cronbach's $\alpha = .74$) subscales.

Mental Illness. Mental illness was assessed via questionnaires on depressive symptoms, anxiety symptoms, and disordered eating.

Depressive symptoms. Depressive symptoms were measured using the Center for Epidemiologic Studies Depression Scale, Revised (CESD-R; Eaton, Muntaner, Smith, Tien, & Ybarra, 2004; see Appendix G). The CESD-R is a screening tool based on the Center for Epidemiologic Studies Depression scale (CES-D; Radloff, 1977) used to identify the risk of depression in the general population. It consists of 20 items that assess depression symptoms over the past week (e.g., "I felt like I could not shake off the blues even with help from my family or friends."). The items are measured on a 4-point Likert scale ranging from 0 (*rarely or none of the time*) to 3 (*most of or all of the time*). The higher the scores, the greater the risk of depression. The measure has demonstrated good psychometric properties based on strong internal consistency (Cronbach's $\alpha = .85$ to $.90$) and adequate test-retest reliability (Eaton et al., 2004). This measure demonstrated excellent internal consistency in the current study (Cronbach's $\alpha = .93$).

Anxiety symptoms. Anxiety symptoms were assessed with the Spielberger State-Trait Anxiety Inventory Six-Item Short Form (STAI-Y-6; Marteau & Bekker, 1992; see Appendix H). The 6-item STAI is based on the longer 40-item STAI (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) and assesses general current (i.e., state) anxiety. Responses are indicated on a 4-point Likert scale ranging from 1 (*not at all*) to 4 (*very much*). Higher scores indicate greater anxiety. The 40-item STAI has very strong internal consistency (Cronbach's $\alpha = .86$ to $.95$).

and good test-retest reliability (Spielberger, 1983). Reliability for the 6-item version is strong (Cronbach's $\alpha = .82$), producing scores similar to the full-form STAI (Marteau & Bekker, 1992). There was an error in the survey where the second item was omitted. This was corrected midway through the study resulting in only 223 students completed this item. This scale displayed adequate reliability in the current study (Cronbach's $\alpha = .71$).

Disordered eating. Disordered eating symptoms were assessed through the Eating Attitudes Test (EAT-26; Garner, Bohr, & Garfinkel, 1982; see Appendix I). The EAT-26 is an updated version of the original Eating Attitudes Test (Garner & Garfinkel, 1979). The EAT-26 consists of 26 items measuring concerns and symptoms of eating disorders in both clinical and non-clinical settings. The EAT-26 contains 3 subscales: 1) dieting (e.g., "I am terrified about being overweight"), 2) bulimia and food preoccupation (e.g., "I give too much time and thought to food"), and 3) oral control ("I display self-control around food"). The responses are rated on a 6-point scale ranging from 1 (*never*) to 6 (*always*); however, scores are converted to never = 0, rarely = 0, sometimes = 0, often = 1, sometimes = 2, and always = 3. Item 26 is reversed scored. Scores range from 0 to 78, with scores of 20 or above considered high. The EAT-26 also has six behavioural questions (e.g., "Lost 20 or more pounds in the past 6 months?") for which a single affirmative answer indicates elevated risk of eating disorders. The EAT-26 demonstrates good internal consistency (Cronbach's $\alpha = .86$) and test-retest reliability (Gleaves, Pearson, Ambwani, & Morey, 2014). The EAT-26 was found to have good reliability in this study (Cronbach's $\alpha = .91$).

Well-being. Well-being was assessed through scales that measure happiness and flourishing.

Happiness. Happiness was evaluated using the Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999; see Appendix J). The SHS is an assessment of global subjective happiness. The scale is composed of four items (e.g., “Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?”). Each item is rated on a 7-point Likert scale, ranging from 1 to 7 (e.g., *not at all* to *a great deal*). A single mean score is calculated from the 4 items, with higher scores reflecting greater happiness. Despite its length, the scale has demonstrated good psychometric properties based on high internal consistency (Cronbach’s $\alpha = .79$ to $.94$) and adequate test-retest reliability (Lyubomirsky & Lepper, 1999). In the current study, the SHS had strong internal consistency (Cronbach’s $\alpha = .84$).

Flourishing. Flourishing was assessed via the Mental Health Continuum Short Form (MHC-SF; Keyes, 2005; see Appendix K). The MHC-SF is a brief version of the long-form Mental Health Continuum questionnaire used to assess positive mental health among adults (Keyes, 2002). This scale consists of 14 items that assess three dimensions of well-being within the past month: 1) emotional (e.g., “During the past month, how often do you feel happy?”), 2) psychological (e.g., “During the past month, how often do you feel that you liked most parts of your personality?”), and 3) social (e.g., “During the past month, how often do you feel that you had warm and trusting relationships with others?”). Responses are rated on a 6-point Likert scale ranging from 1 (*never*) to 6 (*every day*). Higher scores are indicative of greater mental health. The MHC-SF demonstrates strong psychometric properties based on strong internal consistency (Cronbach’s $\alpha > .80$), discriminant validity, and adequate test-retest reliability (Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011). In this study, the MHC-SF demonstrated good reliability (Cronbach’s $\alpha = .94$).

Data Analysis

There were three goals of the data analysis that relate to each of the objectives. The first two objectives were to better understand the nature of the relationships between distinct components of ER (i.e., frequency of strategy use, emotion dysregulation, and ER flexibility) and adaptive and maladaptive psychological outcomes including which were significant and the relative importance of these relationships, while the third was to see if these relationships differ by sex.

Analyses were conducted using SPSS version 24.0 and R. Standardized screening for verifying the statistical assumptions of normality for univariate and multivariate analyses were conducted. These analyses revealed departure from univariate normality for some variables, including reappraisal, depression, happiness, difficulties with ER, and all disordered eating subscales. Therefore, the Yuan-Bentler method for calculating structural equation modelling estimates that are robust to non-normality was used (Yuan, Chan, & Bentler, 2000).

Responses for each variable were used if at least 75% of the questionnaire or subscale was complete. For all questionnaires aside from the FREE scale, mean totals scores were used. The FREE scale score required a polarity calculation that did not allow for the use of mean total scores therefore only complete data was used. Missing data was evaluated using the full information likelihood estimation (FIML) technique. FIML produces unbiased estimates that are more efficient than traditional methods such as pairwise or listwise deletion (Enders & Bandalos, 2001). FIML requires that data be missing at random (MAR), meaning the probability of missingness is not dependent on the missing variables. This method uses the observed data to infer probable values of the missing data, allowing for model fit across all cases, including those with missing data (Enders, 2001).

Structural Equation Modelling

Structural equation modelling (SEM) was used to address the research objectives. SEM is a general statistical modelling technique used to analyze structural relationships. This powerful multivariate analysis tool can be used to test causal relationships between both observed and theoretical variables. SEM allows one to create a model and simultaneously test linear relationships, resulting in an estimation of the model and goodness-of-fit indices. These models are typically visualized using path diagrams, where the observed variables are represented as rectangles, while unobserved, or latent, constructs are represented as ovals. The variables are connected by arrows that represent direction of causality (Hox & Bechger, 1998).

SEM has several advantages over more traditional statistical techniques. First, it allows researchers to test latent constructs that are often of greater interest than observable measures. Further, using latent variables reduces measurement error (Ullman & Bentler, 2013). SEM enables simultaneous testing of multiple relationships, saving time, and reducing error.

Model fit. Model fit was evaluated using four common indices: the Comparative Fit Index (CFI; Bentler, 1990), the Tucker Lewis Index (TLI; Tucker & Lewis, 1973), the root mean square error of approximation (RMSEA; Steiger, 1990), and the standardised root mean square residual (SRMR; (Diamantopoulos & Siguaw, 2000)). A good model fit for both CFI and TLI is indicated by a value greater than .95 (Hooper et al., 2008), while an acceptable RMSEA is a value less than .07 (Steiger, 2007). An advantage to RMSEA is that it allows for the calculation of confidence intervals around its value allowing for more precise testing (MacCallum, Browne, & Sugawara, 1996). A well-fitted model should have a lower limit approaching zero (i.e., a maximum of .05) while the upper limit would be less than .08 (Hooper et al., 2008). Values for SRMR range from zero to one, with well-fitting models having a value of less than .05

(Diamantopoulos & Siguaw, 2000); however, values of up to .08 are acceptable (L. Hu & Bentler, 1999). As, paths are estimated simultaneously, the standardized parameter estimates can be used as effect sizes to compare the relative influence of the exogenous variables on the endogenous variables (Gefen, Straub, & Boudreau, 2000). A path coefficient with a value of less than .10 may indicate a small effect, approximately .30 would indicate a medium effect, and .50 or greater would represent a large effect (Suhr, 2006).

Model specification. Model specification occurs when a researcher proposes relationships between various observed and unobserved variables. SEM has two main components: a measurement model and a structural model. The measurement model is estimated first and describes the relationship between the observed variables (i.e., scales) and the underlying theoretical constructs those variables purport to measure. These relationships are tested through confirmatory factor analysis (CFA) where the observed exogenous variables are regressed onto the latent endogenous variables. The more the observed variables are correlated, the better the latent variable is defined. Since a latent variable is not measured, it must be scaled. One way to do this is to fix the variance of each latent variable to one. This method allows for more straightforward comparison of means and variance between groups. After confirming the validity of the measurement model, the structural model can be tested. The structural model describes the relationships between the variables, including covariances and regressions. Together, the structural and measurement models form the composite model. This composite model is evaluated for model fit and parameter estimates, including factor loadings and regression coefficients.

Multigroup analysis. SEM allows for the separate analysis for multiple categorical groups simultaneously. Multigroup analysis can be used to assess whether the model fits equally

well for both groups or whether there is an interaction effect based on group membership (e.g., sex; Hoyle, 2012). If the parameters do not differ across groups, multigroup SEM follows the same steps outline above (Jöreskog, 1971). Before estimating invariance models, one must ensure that the model without constraints across groups is a reasonable model as all other models are simply constraints on this model. The first test of invariance is the factor loadings.

Measurement invariance demonstrates that the constructs have the same meaning across groups.

If the factor loadings differ between groups, one cannot test the equality of the paths as the measurement units differ between groups. The invariant factor loading model can be used as a basis to test for further invariance. To assess if the SEM model differs depending on the level of the moderator, various parameters can be constrained to be equal and then compared through nested models. Two models are considered nested if they are essentially the same (i.e. have the same variables), but the equality constraints differ (Hoyle, 2012). Equality constraints force the software to estimate a single parameter that is equal for both groups, resulting in a sort of average of the two groups. One may constrain each regression parameter and compare it to a model where only the factor loadings are constrained using the chi-square difference. If there is a significant difference, it suggests the unconstrained model is a better fit, indicating sex has a moderating effect. Another method to identify non-invariant parameters is to examine modification indices. A modification index represents the approximate increase in chi-square if a single parameter were allowed to differ between groups. The critical chi-square value at one degree of freedom when $\alpha = .05$, is 3.84, therefore, a modification index is seen as significant if it exceeds this value.

Measurement invariance was tested through the following steps: 1) baseline model, 2) metric invariance model, 3) omnibus model, 4) modification indices, and 5) final model. The

baseline model estimated a model for each group where all parameters were allowed to vary. For the metric invariance model, the factor loadings were fixed across groups to see if the measurement of theoretical constructs differed across groups. In addition to the factor loadings, the omnibus model had every regression coefficient fixed to see if there was a difference between sexes. Then the modification indices were assessed for significant chi-square values. Lastly, a final model was created based on this information and tested for significance against the omnibus model.

Results

Descriptive statistics of the cross-sectional sample can be seen in Table 1. A correlation matrix of variables of interest is provided in Table 2. Generally, putatively adaptive ER (i.e., reappraisal, flexibility) was positive correlated with well-being (i.e., happiness, flourishing), and negatively correlated with internalizing symptoms (i.e., depression, anxiety). Interestingly, the only significant correlation between adaptive ER and disordered eating was found between reappraisal and the bulimia subscale. Putatively maladaptive ER (suppression, dysregulation) was positively correlated with internalizing symptoms and disordered eating and negatively correlated with well-being. In terms of ER variables, reappraisal was negatively correlated with dysregulation and positively correlated with ER flexibility, while suppression was positively correlated with dysregulation.

An SEM model was tested to evaluate the relationships between various components of ER and well-being, internalizing symptoms, and disordered eating. Sex differences were assessed using a multigroup approach. Model testing was conducted as outlined previously. The fit indices for each model are depicted in Table 3 and the hypothesized model is shown in Figure 1.

Measurement model. The initial model led to an improper solution due to negative variance in one of the disordered eating subscales (dieting). The EAT-26 questionnaire suggests scoring it in a discontinuous manner, where scores of 1, 2, and 3 all get converted to 0, and scores 4, 5, and 6, are converted to 1, 2, and 3. When the initial 1 through 6 Likert scoring was maintained, the variance of the dieting subscale was no longer negative. There was no significant χ^2 difference between the baseline model (where every regression coefficient and factor loading was allowed to vary) and metric invariance model (where factor loadings were fixed, $p > .05$), indicating factor-loading invariance. Therefore, this model was retained for further testing. This measurement model had acceptable fit for all indices: $\chi^2(61) = 89.32$, $p = .012$, CFI = .98, TLI = .96, RMSEA = .039 with 90% CI intervals (.019, .055), and SRMR = .032. All variables positively and significantly loaded onto their respective latent variables (all $ps < .001$) suggested the items were measuring the same construct.

Structural model. The omnibus model (where all regression coefficients and factor loadings were fixed) was not significantly different than the metric invariance model ($p > .05$) suggesting there were not significant sex differences. However, there was a large modification index (MI = 8.39) for the association between ER flexibility and well-being, suggesting sex moderates this relationship. Therefore, a model was constructed where the factor loadings and all regression coefficients were fixed, except for the slope between flexibility and well-being. When this model was compared to the omnibus model, it was found to be significantly different ($p < .05$) and therefore was chosen as the final model. The final structural model was found to have acceptable fit on all fit indices $\chi^2(72) = 100.31$, $p = .021$, CFI = .99, TLI = .98, RMSEA = .035 with 90% CI intervals (.014, .051), and SRMR = .035. The final model parameters are shown in Table 4. For both men and women, suppression, reappraisal, and dysregulation had significant

associations with well-being and internalizing symptoms. Suppression and dysregulation were associated with disordered eating for both groups. However, flexibility was only significantly related to well-being for men. For women, the model accounted for 54.6% of the variance in well-being, 56.9% of the variance in internalizing symptoms, and 9.4% of the variance in disordered eating, while the model accounted for 49.2% of the variance in well-being, 47.8% of the variance in internalizing symptoms, and 6.3% of the variance in disordered eating among men.

Table 1.

Study Variables of Interest

	Full Sample	Females	Males		
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>t</i> -test <i>p</i>	Scale Range
<i>Emotion Regulation</i>					
Reappraisal frequency (ERQ)	29.14 (6.03)	29.08 (6.09)	29.35 (5.85)	.646	1 - 7
Suppression frequency (ERQ)	16.46 (4.95)	15.90 (5.03)	18.21 (4.29)	.000***	1 - 7
Emotion Dysregulation (DERS)	92.74 (25.26)	93.39 (26.00)	90.74 (22.74)	.233	1 - 5
ER Flexibility (FREE)	59.83 (12.23)	60.23 (11.92)	58.58 (13.14)	.198	1- 6
<i>Mental Health</i>					
Happiness (SHS)	4.60 (1.25)	4.60 (1.26)	4.60 (1.23)	.853	1 - 7
Flourishing (MHC-SF)	46.53 (14.59)	46.30 (14.84)	47.28 (13.75)	.457	0 - 5
<i>Internalizing Symptoms</i>					
Anxiety (STAI-Y-6)	43.81 (13.35)	44.18 (13.83)	42.66 (11.72)	.194	1 - 4
Depression (CES-D)	20.34(12.40)	20.99 (12.74)	17.98 (10.80)	.016*	0 - 3
<i>Disordered Eating (EAT-26)</i>					
Dieting	33.49 (13.11)	33.74 (13.39)	32.69 (12.21)	.402	1 - 6
Bulimia	12.37 (5.08)	12.40 (5.13)	12.26 (4.92)	.781	
Control	16.33 (5.39)	16.46 (5.63)	15.89 (4.46)	.245	

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2.

Summary of Pearson Correlations for Study Variables Used in the Structural Equation Model

Variable	1	2	3	4	5	6	7	8	9	10
1. ERQ-R	—									
2. ERQ-S	.003	—								
3. DERS	-.43***	.33***	—							
4. FREE	.09*	-.06	-.13**	—						
5. SHS	.44***	-.30***	-.52***	.15***	—					
6. MHC	.35***	-.26***	-.49***	.21***	.62***	—				
7. CES-D	-.40***	.25***	.65***	-.09	-.65***	.59***	—			
8. STAI	-.34***	.18***	.51***	-.10*	-.55***	-.48***	.67***	—		
9. EAT-D	-.04	.19***	.22***	-.03	-.11**	-.08	.13**	.04	—	
10. EAT-B	-.13**	.13**	.24***	-.05	-.08	-.10*	.13**	.10**	.66***	—
11. EAT-C	-.02	.14**	.17***	-.06	-.10*	-.13**	.13**	.09*	.36***	.28***

Note. ERQ = Emotion Regulation Questionnaire, R = Reappraisal, S = Suppression; DERS = Difficulties in Emotion Regulation Scale; FREE = Flexible Regulation of Emotional Expression Scale; SHS = Subjective Happiness Scale, MHC = Mental Health Continuum, Short Form; CES-D = Centre for Epidemiological Studies Depression Scale; STAI = Spielberger Trait Anxiety Inventory Six-Item Short Form, EAT = Eating Attitudes Test-26, D = Dieting, B = Bulimia, C = Control.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3.

Model Fit Indices for the Tested Models (N = 612)

Model	χ^2	df	CFI	TLI	RMSEA (90% CI)	SRMR	Ref	AIC	BIC	$\Delta\chi^2$	$\Delta\chi^2 p$ - value
1. Baseline	82.80	54	.98	.97	.042 (.023, .060)	.030	-	17742	18184	-	-
2. Metric invariance	89.32	61	.98	.96	.039 (.019, .055)	.032	1	17735	18146	6.52	.480
3. Omnibus	106.23	73	.98	.98	.037 (.019, .053)	.038	2	17728	18086	16.90	.153
4. Final	100.31	72	.99	.98	.035 (.015, .051)	.035	3	17724	18086	5.92	.015*

Note. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error Average; CI = confidence intervals, SRMR = Standardized Root Mean Square Residual; Ref = reference model used for comparison, AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion.

* $p < .05$

Table 4.

Latent Variable Structural Regression Results for the Final Model (N = 612)

Endogenous latent variable	Exogenous variable	<i>B</i>	<i>SE(B)</i>	<i>Z</i>	<i>p</i>	<i>B*</i>	
						Females	Males
Well-being							
	Reappraisal	.473	.068	6.951	<.001	.321	.328
	Suppression	-.268	.053	-5.106	<.001	-.227	-.204
	Dysregulation	-.843	.109	-7.27	<.001	-.409	-.386
	Flexibility						
	Females	.010	.005	1.793	.073	.078	—
	Males	.030	.009	3.297	<.001	—	.283
Internalizing							
	Reappraisal	-.276	.060	-4.591	<.001	-.183	-.194
	Suppression	.100	.048	2.089	<.05	.083	.077
	Dysregulation	1.299	.131	9.908	<.001	.614	.603
	Flexibility	-.002	.005	-.452	.651	-.019	-.022
Disordered Eating							
	Reappraisal	.020	.055	.357	.721	.019	.019
	Suppression	.113	.042	2.684	<.01	.135	.117
	Dysregulation	.340	.087	3.910	<.001	.233	.212
	Flexibility	-.001	.004	-.130	.897	-.006	-.007

Note. *B** = completely standardized regression slope estimates.

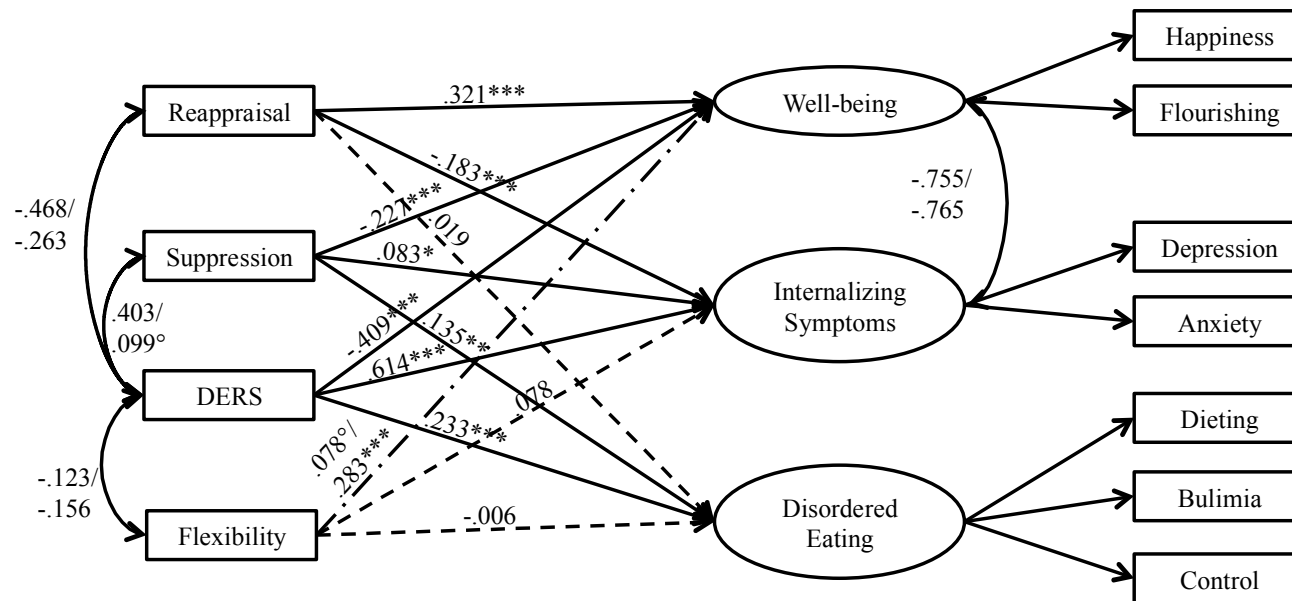


Figure 1. Hypothesized path diagram. Standardized path coefficients based on the female group when sex was not a significant moderator. When two numbers are listed, left/right = female/male. Solid lines represent significant paths, dashed lines represent non-significant paths, and long dash-dot lines represent a significant path for one sex only.

* $p < .05$. ** $p < .01$. *** $p < .001$. °not significant.

Discussion

The goal of this study was to better understand how ER relates to mental health among emerging adults. Specifically, this study investigated which components of ER (reappraisal, suppression, dysregulation, flexibility) are associated with psychological well-being (happiness, flourishing), internalizing symptoms (depression, anxiety), and disordered eating. In addition, the relative strengths of these relationships were investigated. Finally, sex differences in the relationships between ER and psychosocial outcomes were examined.

The current study findings support the large body of research on the importance of ER on adaptive and maladaptive outcomes among emerging adults. Emotion dysregulation was negatively related to well-being and positively related to both internalizing symptoms and disordered eating. Moreover, the use of reappraisal by emerging adults was found to be positively associated with well-being and negatively associated with internalizing symptoms (both anxiety and depressive symptoms), while the opposite relationships were found for suppression. In addition, suppression was positively associated with disordered eating. Finally, ER flexibility was only significantly associated with well-being for men. This study only found support for a sex difference in the relationship between ER flexibility and well-being.

Effects of ER Dysregulation on Well-being, Internalizing Symptoms, and Disordered Eating

The present study found robust relationships between difficulties with ER and well-being. While difficulties with ER are known to contribute to psychopathology, there is less research on dysregulation and well-being. Few studies examine difficulties with ER and happiness or flourishing directly. The present study bolsters a previous SEM study that found a similar moderate effect size for the associations between a specific component of dysregulation (i.e.,

poor ability to maintain goal-directed behaviour when experiencing a negative emotion) and flourishing among emerging adults (Coffey et al., 2010). Further, a study of university students found a similarly strong negative correlation between dysregulation and happiness as did the present study ($-.50$ vs. $-.52$; Erisman & Roemer, 2012).

The study findings provide further support for the known relationship between difficulties with ER and internalizing symptoms. A number of researchers have proposed that ER deficits directly lead to depression and anxiety (Gross & Munoz, 1995; Ehring et al., 2008; Mennin, Heimberg, Turk, & Fresco, 2005). A large body of research supports a relationship between dysregulation and both depression (e.g., Ehring et al., 2008; Joormann & D'Avanzato, 2010) and anxiety (e.g., Mennin, Heimberg, Turk, & Fresco, 2005; Rusch, Westermann, & Lincoln, 2012). Further, this association has been found among emerging adults. Like the present study, a previous study of emerging adults reported a large effect size for the association between difficulties with ER (specifically inability to maintain goal-directed behaviours while having a negative emotion) and psychological distress (i.e., depression, anxiety; Coffey et al., 2010).

In the present study, dysregulation was also significantly associated with disordered eating. Eating disorder models suggest that difficulties with ER leads individuals to engage in disordered eating behaviours (Kenny, Singleton, & Carter, 2017). Emotion dysregulation has been found to be related to anorexia nervosa (Haynos, Roberto, Martinez, Attia, & Fruzzetti, 2014), bulimia nervosa (Lavender et al., 2014), binge eating (Whiteside et al., 2007), and disordered eating (Muehlenkamp, Peat, Claes, & Smits, 2012). Further, in a non-clinical sample of emerging adult women, difficulties with ER were associated with disordered eating behaviours and predicted eating disorder severity (Cooper, O'Shea, Atkinson, & Wade, 2014).

Effects of ER Strategy Use on Well-being, Internalizing Symptoms, and Disordered Eating

The relationship between ER strategy use and well-being found in this study is consistent with the literature and ER theory. Reappraisal has been shown to be positively related to indicators of well-being, such as positive affect and life satisfaction, while the use of suppression is inversely related to well-being (Hu et al., 2014). While the research on strategy use and flourishing is limited, one study found individuals that were flourishing (defined as have a high proportion of positive vs. negative emotions) used less suppression than those who were doing moderately well (or had a similar ratio of positive to negative emotions; Barber, Bagsby, & Munz, 2010). A study of university students found that up-regulating positive emotions led to flourishing while the suppression of positive emotions was unrelated to flourishing, suggesting up-regulation of positive emotions may be an important contributor to well-being (Basson & Rothmann, 2017).

Similarly, the link between ER strategy use and maladaptive outcomes in the present study is consistent with much of the literature. The use of reappraisal is negatively related to psychological disorders, while the inverse relationships have been found for suppression (Hu et al., 2014). While reappraisal is generally negatively associated with mental health problems, there is some heterogeneity in the research. In line with the present study, a meta-analysis found that reappraisal was negatively associated with psychopathology, with a small to medium effect size (Aldao et al., 2010). In contrast, Nolen-Hoeksema and Aldao (2011) found the use of reappraisal was not related to psychopathology for either sex; however, a subsequent analysis by Nolen-Hoeksema (2012) revealed that for women, putatively adaptive strategies (such as reappraisal) may have a buffering effect among those with high levels of maladaptive strategies (such as suppression) on reducing psychopathology (depression, anxiety, and alcohol use

problems). This interaction was not found for men. Conversely, a recent study on Taiwanese adolescents found that reappraisal buffers against the negative effects of suppression on negative emotions and internalizing symptoms for boys but not girls (Yeh, Bedford, Wu, Wang, & Yen, 2017) indicating there may be cultural or developmental differences for this buffering effect.

Suppression may contribute to reduced well-being through interfering with social functioning. A core component of flourishing is positive social functioning (Keyes, 2007), and this may be especially important among emerging adults. While university students spend a majority of time with peers their own age, as emerging adults, they are still closely linked to their parents and families and rely on them for support. Shulman, Kalnitzki, and Shahar (2009) reported paternal support predicts later adaptive functioning among emerging adults attending university. Those who engage in more suppression may conceal their emotions from their parents, thus gaining less emotional support. Indeed, one study found emerging adults who habitually engage in suppression in their home environment perceive their parents as being less supportive (Srivastava, Tamir, McGonigal, John, & Gross, 2009). In addition to parents, peers are another important source of support for emerging adults. Compared to adolescents, emerging adults seek out more social support (Zimmermann & Iwanski, 2014). One study reported university students with stable secure attachment to both parents and peers experienced the best academic, emotional, and social functioning (Holt, Mattanah, & Long, 2018). Further, another study of university students reported that having close friendships was a strong predictor of happiness (Demir, Özdemir, & Weitekamp, 2007). A longitudinal study of first-year university students found the use of suppression predicted reduced social support from friends, less closeness to others, and lower social satisfaction (Srivastava et al., 2009). This finding was supported by a second study that found reappraisal was positively related to social functioning,

whereas suppression was negatively associated with social functioning (Cabello et al., 2013). Many social interactions rely on communicating emotional states. For example, sharing positive and negative emotions can contribute to social bonding (Wetzer, Zeelenberg, & Pieters, 2007). Among emerging adult women, engaging in suppression during a face-to-face social interaction could cause an individual to be viewed as hostile and withdrawn and lead to fewer socially rewarding behaviours in both parties (Butler et al., 2007). It is also possible that suppression may interfere with socializing due to the cognitive demands associated with suppression (Richards & Gross, 1999), the feelings of inauthenticity this strategy can lead to (John & Gross, 2004), or that the suppression attempt may be unsuccessful and detected by others (Srivastava et al., 2009).

The current research study supported a relationship between suppression and disordered eating but not reappraisal and disordered eating. In agreement with the present study, another SEM study found no relationship between reappraisal and disordered eating, although it did support a relationship between suppression and eating disorder symptoms (Mitchell & Wolf, 2016). The effect size of the relationship between suppression and disordered eating found in Mitchell and Wolf's (2016) model is very close to the one found in the present study (.151 vs. .135), even though the study populations are very different (older veterans vs. emerging adults). Moreover, among female university students, suppression but not reappraisal led to emotional eating (Evers, Stok, & de Ridder, 2010). Resource depletion theory may help explain why suppression, but not reappraisal, is associated with emotional eating. According to this model, self-control is a limited resource that deteriorates with repeated exertions (Baumeister, Vohs, & Tice, 2007). Suppression may lead to emotional eating because it taxes individuals' self-control resources, causing them to lose control of their eating behaviours. Prior research has demonstrated that individuals have reduced self-control after engaging in suppression but not

reappraisal (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Wang, Yang, & Wang, 2014). In contrast, one study found an association between reappraisal and binge eating (Dingemans, Danner, & Parks, 2017); however, this relationship may be complex. Svaldi, Caffier, & Tuschen-Caffier (2010) reported that, while women with binge eating disorder used reappraisal less often than those without, reappraisal did not increase desire to binge while suppression did, indicating suppression may contribute more to eating disorder symptoms. Another study reported no correlation between eating disorder symptoms and reappraisal, but did find more disordered eating among individuals with binge-purge symptoms who rarely used reappraisal and had high levels of emotional eating, indicating reappraisal might interact with other factors to support disordered eating among specific populations (Danner, Evers, Stok, Van Elburg, & De Ridder, 2012). In support of this hypothesis, reappraisal was found to be inversely associated with eating disorder severity among individuals with anorexia nervosa, binge-purge type and binge eating disorder, while greater use of reappraisal was related to more severe eating disorder symptom among women with anorexia nervosa, restricting type (Danner, Sternheim, & Evers, 2014). It is possible that grouping multiple eating disorder subtypes together may obscure these differential relationships. Further, a meta-analysis found only a very small-effect size ($r = -.05$) for the relationship between reappraisal and eating disorders, while relationship between suppression and eating disorders had a much larger effect size ($r = .36$; Aldao et al., 2010). Taken together, the current study and previous research indicates that the use of suppression is a greater contributor to disordered eating than the use of reappraisal.

The inconsistent findings on strategy use and outcomes suggest there are important unexplored moderators, including context (Kalokerinos, Greenaway, & Denson, 2015). Similarly, recently researchers have questioned a polarized view of adaptive and maladaptive

strategies. For example, one study reported that individuals tend to use reappraisal when faced with low-intensity emotional stimuli, but prefer to disengage via distraction when faced with high-intensity stimuli (Sheppes, Scheibe, Suri, & Gross, 2011). It may be that reappraisal is not as effective a strategy when regulating strong emotion. Indeed, distraction appears to be more effective and require less effort than reappraisal in situations of high-intensity emotion (Birk & Bonanno, 2016). Furthermore, the function of the ER strategy could be an important moderator. For example, one study found that for women who had greater acceptance of their emotions, suppression was negatively associated with depression, while the opposite relationship was found among women with low emotional acceptance (Flynn et al., 2010). The authors posited that the women with high emotional acceptance were suppressing their emotions for prosocial reasons, while those with low emotional acceptance were attempting to block painful emotions. Culture may be another important mediator as differences in strategy use and outcomes have been reported. For example, Asian American emerging adults reported engaging in the strategy of suppression more frequently than European American emerging adults (English & John, 2013) and, similarly, individuals living in cultures that value maintaining social order tend to use more suppression than those living in cultures that emphasize individual autonomy (Matsumoto, Yoo, & Nakagawa, 2008). Furthermore, the correlation between suppression and symptoms of mental illness is stronger for individuals living in Western countries (i.e., those in Europe and North America) as compared to those living in Eastern countries (e.g., China, Japan, Korea), and suppression was only negatively related to well-being in the Western samples (Hu et al., 2014). Further, Butler and colleagues (2007) reported cultural norms of emotional expressivity impacted the purpose of engaging in suppression, whereby the use of suppression was positive associated

with self-protective goals among women with European values and negatively associated with self-protective goals among women with bicultural (Asian and European) values.

Effects of ER Flexibility on Well-being, Internalizing Symptoms, and Disordered Eating

While most ER research utilizing questionnaires assesses strategy use frequency, the ability to flexibly regulate emotions given specific contexts may be more important (Bonanno & Burton, 2013). This study operationalized ER flexibility as the ability to both enhance and suppress positive and negative emotions and found that it was unrelated to internalizing symptoms or disordered eating. Unlike a previous study (Burton & Bonanno, 2016), this study found weak or no correlations between the scale and symptoms of depression, anxiety, or disordered eating. Interestingly, a study on Chinese emerging adults found that suppression ability but not enhancement ability predicted lower rates of anxiety and depression, and enhancement ability but not suppression ability was related to life satisfaction (Chen, Chen, & Bonanno, 2018). The only significant relationship between ER flexibility and mental health outcomes was a positive association between flexibility and well-being, indicating the ability to flexibly enhance and suppress emotion may be more important for enhancing well-being than for preventing mental illness. The present study included an ethnically diverse sample. The adaptiveness of suppressing or enhancing emotional expression may have a strong cultural component given differing cultural display norms (Matsumoto et al., 2008). As suggested by the above study, an individual from an Eastern culture who scores high on suppressive ability but low on enhancement ability may have very adaptive functioning but would have a low flexibility score. This may, in part, explain the lack of findings between ER flexibility and outcomes. Further, the flexibility measure only assesses one specific component of flexibility and does not fully capture the construct of ER flexibility.

The Relative Importance of Components of ER on Well-being, Internalizing Symptoms, and Disordered Eating

One unique contribution of this study was the statistical analysis employed allowed for the comparison of the relative influence of different components of ER. As predicted, difficulties with ER had a larger effect on internalizing symptoms and disordered eating than did habitual strategy use or flexibility. This finding was anticipated due to the unambiguous research underscoring the effects of dysregulation on depression (e.g., Campbell-Sills, Barlow, Brown, & Hofmann, 2006), anxiety (e.g., Salters-Pedneault, Roemer, Tull, Rucker, & Mennin, 2006), and disordered eating (e.g., Lavender et al., 2014; Whiteside et al., 2007), while, as discussed above, the relationships between strategy use and psychosocial outcomes is less clear. Dysregulation also had a more robust relationship with well-being than did the other components of ER, supporting the idea that ER abilities are important for positive mental health as well.

In the present study, the use of suppression was negatively related to well-being and disordered eating for both men and women but was only weakly related to internalizing symptoms. In contrast with the results of this study, a meta-analysis found a moderate effect size for the relationship between suppression and depression, anxiety, and eating disorders (Aldao et al., 2010); however, this study combined expressive and thought suppression into a single category. Thought suppression may lead to different outcomes than expressive suppression (Aldao et al., 2010). For example, Wenzlaff and Wegner (2000) found attempting to suppress negative thoughts can paradoxically lead to increased negative thoughts. Another study (Nolen-Hoeksema & Aldao, 2011) found that suppression moderately correlated with depression for both men and women. This disparate finding may be partly due to difference in sample composition. Nolen-Hoeksema & Aldao's (2011) study included adults ranging from ages 25 to

75, and does not specify the ethnic makeup of the sample population, and the previously mentioned meta-analysis (Aldao et al., 2010) excluded non-English speaking populations. In contrast, the present study included a very diverse sample. The relationship between suppression and psychopathology may differ based on ethnic background even among individuals living in North America. For example, Butler and colleagues (2007) reported that while suppression was related to increased negative emotion among American women with European cultural values, the opposite relationship was found for women with bicultural (i.e., both European and Asian) values, where suppression was related to less negative emotion. Similarly, another study found suppression was associated with increased depression and reduced life satisfaction among European Americans, but, among Hong Kong Chinese, suppression was unrelated to psychological functioning (Soto, Perez, Kim, Lee, & Minnick, 2011). In addition, there are mixed findings on the relationship between suppression and depressive symptoms. For example, Joormann and Gotlib (2010) found no difference in the use of suppression between individuals who were never depressed, those previously depressed, and those currently experiencing depression; however, among the formerly depressed sample, greater use of suppression (as well as the decreased use of reappraisal) was associated with more symptoms of depression.

The present study found effect sizes for the relationships between reappraisal use and both well-being and internalizing symptoms were somewhat stronger than these same outcomes for suppression. In a longitudinal study of emerging adults, the use of reappraisal predicted later greater well-being (including hope, resilience, and social well-being), and less psychological distress (i.e., depression, anxiety, and stress; Brewer, Zahniser, & Conley, 2016). In contrast, the use of suppression was only a significant predictor of one well-being measure (reduced life satisfaction) and did not meaningfully predict later psychological distress, including depression,

anxiety, and stress (Brewer et al., 2016). Further, Brewer and colleagues (2016) reported that the effect sizes were only meaningful for the predictive effects of ER strategies on psychological well-being and not psychological distress. Masumoto, Taishi, and Shiozaki (2016) reported reappraisal had a stronger association with positive affect than negative affect. Similarly, the present study found stronger associations between ER strategy use and well-being than strategy use and internalizing symptoms.

This study found dysregulation more strongly related to well-being and internalizing symptoms (medium to large effect sizes) than disordered eating (small effect size). Despite the extensive research on the association between ER deficits and eating disorders, and clinical eating disorder patients were found to have much more emotion dysregulation than healthy controls (large effect size; Harrison et al., 2010), a previous study on a non-clinical population of female high school and university students also found difficulties with ER explained less than 10% of the variance in disordered eating (Cooper et al., 2014). Similarly, a study of undergraduate university students found that difficulties with ER uniquely accounted for about 6% of the variance in binge eating. Taken together, these data suggest that while difficulties with ER is an important contributor to disordered eating symptoms, the relationship may not be as robust as it is for psychological well-being and internalizing symptoms.

Sex Differences

Only a single sex difference in the relationships between ER and psychosocial outcomes emerged. The present study found flexibility was positively associated with well-being among emerging adult men only. There are a few possible explanations for this sex difference. While men and women seem to have similar abilities to up- and down-regulate emotional expression, implementing ER strategies may require more effort for women (McRae & Ochsner, 2008). As

compared to men, women seem to have stronger reactions to negative events and experience greater affect intensity for both positive and negative emotions (Nolen-Hoeksema, 2012).

Therefore, the ability to flexibly enhance or suppress emotion may come at a greater cost for women than men. It is also possible that there is a threshold effect, whereby there is a minimum level of ER flexibility required for effective functioning and that a greater proportion of men fall below this threshold than women. Once this threshold is met, further increases in ER flexibility may not promote greater well-being. A similar threshold effect has been proposed for sex differences in the relationship between the related concept of emotional intelligence and psychosocial outcomes (Brackett, Mayer, & Warner, 2004). Finally, societal gender-role norms contribute to what emotionally expressive behaviour is considered acceptable for men and women. In many circumstances, men may be expected to have more emotional control (Mahalik et al., 2003) and may experience more stigma if they lack control. Men may also experience more societal pressure to suppress emotions, while reduced ability to suppress emotional expression may be more accepted in women. Thus, poor ability to control emotional expression, particularly expressive suppression, may have more adverse effects for men than women.

There was also a sex difference in the covariance of two ER variables. While the research supports small to moderate correlations between suppression and difficulties with ER (Bardeen & Fergus, 2014; Ehring & Quack, 2010; Zelkowitz & Cole, 2016), the present study only found a significant covariance between suppression and dysregulation for women. None of the above studies examined sex differences in this association and all had majority female samples. This finding suggests that suppression may be linked to dysregulation among emerging adult women but not men, indicating suppression may not be a maladaptive strategy for men. Flynn and colleagues (2010) reported an aspect of emotion dysregulation, non-acceptance, was only

correlated with suppression in women and not men; however, suppression was associated with depressive symptoms among men but not women. The authors posited that suppression may be a consequence of depression rather than the use of suppression leading to depressive symptoms, as men may face societal gender norms to not show depressed states. Taken together, it seems that there may be some sex differences in ER among EAs, particularly regarding the importance of flexibility and the relationship between suppression and dysregulation.

Limitations and Future Directions

While this study is the first known to investigate how these specific components of ER relate to well-being, internalizing symptoms, and disordered eating among emerging adults, the results of the study should be considered with the following limitations. The sample for this study was restricted to emerging adults currently enrolled in an urban university. Although most Canadian emerging adults attend post-secondary education (Statistics Canada, 2009), the results may not be generalizable to emerging adults who are not students. Second, the cross-sectional data cannot be used to infer causality (Mann, 2003). Furthermore, this sample was majority female so the results may not be generalizable to emerging adult men. Future research should include longitudinal data so that causal models can be established, as well as more balanced sample compositions.

Data was collected via self-report, which is subject to the social desirability response bias (van de Mortel, 2008). Further, the measure of flexibility is relatively novel and is only moderately correlated with laboratory measures of expressive flexibility (Burton & Bonanno, 2016). Future research should incorporate alternate methods of assessing flexibility, such as laboratory measurements or real-time measures such as ecological momentary assessment (Shiffman, Stone, & Hufford, 2008). There is limited research on ER and positive mental health,

and future elucidation of this relationship, including the role of up-regulating positive emotions, would be valuable. Finally, research is needed that examines ER contextually, and considers moderating factors like individual differences, ethnic background, beliefs about emotions, and context. Doré, Silvers, & Ochsner (2016) advocate for a research framework that views ER as an interaction of person, situation, and strategy and assumes that the regulatory outcomes vary according to these factors. Ecological momentary assessment that examined individual variables, situational factors, and strategy choice would illuminate the relationships between ER strategy use, ER flexibility, and outcomes (Aldao et al., 2015).

Study Implications

The results of the current study underscore the importance of ER on psychological well-being among emerging adults. The findings have important implications for both universities and clinicians working with emerging adults. As emerging adulthood is a key period where ER competency is gained (Zimmermann & Iwanski, 2014) but individuals still experience high levels of psychopathology (Schulenberg & Zarrett, 2006), it may be an optimal time for both prevention and intervention. Further, psychosocial difficulties during emerging adulthood portend problems with adjustment later in life (Conley et al., 2014), indicating this could be a critical juncture for intervention. In recent years, many universities have instituted health promotion programs (Dooris et al., 2018), and an important aspect of these programs is promoting student mental health (Okanagan Charter, 2015; World Health Organization, 1998). These programs should explicitly teach effective ER, including information on a range of effective strategies, as well as the importance of ER flexibility, particularly for men, to help promote well-being among university students. While ER-based mental health promotion programs have yet to be tested in a university setting, ER-focused prevention programs have

been shown to be effective in a school-based setting, improving children and adolescents' ER and emotional competence (Horn, Pössel, & Hautzinger, 2011; Finlon et al., 2015; Smyth & Arigo, 2009). Furthermore, for emerging adults experiencing mental health problems, clinical interventions targeting ER may be particularly effective (Kumar, Feldman, & Hayes, 2008; Renna et al., 2017; Renna et al., 2018).

Conclusion

In summary, this study explored the ways different components of ER contribute to well-being, internalizing symptoms, and disordered eating among emerging adults. Results underscore the importance of habitual strategy use for both positive and negative outcomes. Reappraisal was associated with both well-being and internalizing symptoms, while suppression was related to well-being, internalizing symptoms, and disordered eating. Dysregulation was also related to all three outcomes, while ER flexibility was only related to well-being among men. The findings contribute to the large body of literature on ER and adaptive and maladaptive outcomes and have important implications for universities, clinicians, and researchers. Future research should build on these findings by using alternative ways of assessing ER flexibility and longitudinal data.

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Appendix A

Consent Forms

PSYC 1010 Consent Form

Study Name: How Managing Emotions Affects University Student Well-being

Researchers: Dr. Jennine S. Rawana,
Rivka Levin

Purpose of the Research: The purpose of this study is to better understand how we manage our emotions and how this relates to other aspects of the lives of university students.

What You Will Be Asked to Do in the Research: This study consists of an online survey asking you about a broad range of behaviours and emotions encountered in university and pertaining to eating patterns. For example, the survey will ask questions about your emotions, any feelings of low mood, and patterns of eating. Some demographic information is also collected. It will take approximately 30 minutes to complete the survey.

Risks and Discomforts: There are no serious anticipated risks involved with completing the survey. Some people may become uncomfortable or distressed while completing some questions related to feelings of sadness or other questions. If you do become distressed, please contact the Counselling & Development Centre at York University (Ph: 416-736-5297; Location: N110 Bennett Centre for Student Services). At the end of the survey, you will also be given a list of other local counselling resources.

Benefits of the Research and Benefits to You: Benefits of participating in the study are an added percentage to your PSYC 1010 grade, gaining experience in psychology research, and helping us better understand what contributes to the well-being of university students.

Voluntary Participation: This is a voluntary study. You are free to not answer any questions and to stop participating at any time without academic penalty in PSYC 1010 (i.e., there will be no impact on your marks). Furthermore, refusal to participate, refusal to answer any particular questions, or withdrawal from the study will not affect your relationship with the researchers, York University, or any group associated with this research.

Withdrawal from the Study: You can stop participating in the study at any time, for any reason, if you so decide. If you decide to stop participating, you will still be eligible for academic credit. Your decision to stop participating, or to refuse to answer particular questions, will not affect your relationship with the researchers, York University, or any other group associated with this project. In the event you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

Confidentiality: All responses to these questions will be kept anonymous and confidential by the researchers. Data will be stored online on a secured website and will be transferred to Dr. Jennine Rawana's secure research server. Data files will be password protected. Data will be stored electronically for seven years, at which point the data will be destroyed. Data files without identifying information may be kept indefinitely at York University. **Confidentiality will be provided to the fullest extent possible by law.** Your name will not be linked with your answers.

Questions About the Research? If you have any questions about the survey or the study in general, please contact REACH Lab, or Dr. J. Rawana.. **This research has received ethics review and approval by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to**

the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions regarding your rights or the ethics review process please contact the Senior Manager and Policy Advisor for the Office of Research ethics at York University, 5th Floor, Kaneff Tower (416) 736-5914 (ore@yorku.ca)

Please select below that you “agree” or “disagree” to participate in this study. By selecting “agree” and continuing to complete this survey online, you are providing your consent to participate in this study and indicating you have read this Consent Form. Thank you.

Response Options:

I agree ☐ or disagree ☐ to participate in the Survey component of the study.

Non-PSYC 1010 Consent Form

Study Name: How Managing Emotions Affects University Student Well-being

Researchers: Dr. Jennine S. Rawana,
Rivka Levin

Purpose of the Research: The purpose of this study is to better understand how we manage our emotions and how this relates to other aspects of the lives of university students.

What You Will Be Asked to Do in the Research: This study consists of an online survey asking you about a broad range of behaviours and emotions encountered in university and pertaining to eating patterns. For example, the survey will ask questions about your emotions and patterns of eating. Some demographic information is also collected. It will take approximately 30 minutes to complete the survey.

Risks and Discomforts: There are no serious anticipated risks involved with completing the survey. Some people may become uncomfortable or distressed while completing some questions related to feelings of sadness or other questions. If you do become distressed, please contact the Counselling & Development Centre at York University (Ph: 416-736-5297; Location: N110 Bennett Centre for Student Services). At the end of the survey, you will also be given a list of other local counselling resources.

Benefits of the Research and Benefits to You: Benefits of participating in the study are the chance of winning a Tim Hortons gift card, gaining experience in psychology research, and helping us better understand what contributes to the well-being of university students.

Voluntary Participation: This is a voluntary study. You are free to not answer any questions and to stop participating at any time without impacting your draw in the raffle. In exchange for your participation, you will be entered in a raffle to win 1 of 5 Tim Hortons' gift cards. Furthermore, refusal to participate, refusal to answer any particular questions, or withdrawal from the study will not affect your relationship with the researchers, York University, or any group associated with this research.

Withdrawal from the Study: You can stop participating in the study at any time, for any reason, if you so decide. If you decide to stop participating, you will still be eligible to be entered in the gift card draw. Your decision to stop participating, or to refuse to answer particular questions, will not affect your relationship with the researchers, York University, or any other group associated with this project. In the event you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

Confidentiality: All responses to these questions will be kept anonymous and confidential by the researchers. Data will be stored online on a secured website and will be transferred to Dr. Jennine Rawana's secure research server. Data files will be password protected. Data will be stored electronically for seven years, at which point the data will be destroyed. Data files without identifying information may be kept indefinitely at York University. **Confidentiality will be provided to the fullest extent possible by law.** Your name will not be linked with your answers.

Questions About the Research? If you have any questions about the survey or the study in general, please contact REACH Lab or Dr. J. Rawana. **This research has received ethics review and approval by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines.** If you have any questions regarding your rights or the ethics review process please contact the Senior Manager and Policy Advisor for the Office of Research ethics at York University, 5th Floor, Kaneff Tower (416) 736-5914 (ore@yorku.ca)

Please select below that you “agree” or “disagree” to participate in this study. By selecting “agree” and continuing to complete this survey online, you are providing your consent to participate in this study and indicating you have read this Consent Form. Thank you.

Response Options:

I agree ☐ or disagree ☐ to participate in the Survey component of the study

Appendix B

Debriefing Sheet

Debriefing Information for Research Participants

We would like to thank you for completing our **Survey** study on feelings and behaviours experienced while attending university. The questions that you have answered pertaining to physical activity, feelings, and coping will help us identify some common problems and strengths experienced in undergraduates. Some of the questions in this survey may have made you feel uncomfortable or distressed. If you are or anyone you know is feeling depressed or psychologically distressed, there is help available. Below is contact information for some helpful services if you are feeling psychologically depressed or distressed.

Before we end this study, we would like to please not talk about this study with anyone. There are many other people who have not participated in this study yet. If they hear from you or others about what the study is about, it may influence their responses. Our results may not be accurate. We hope that you will cooperate with us in this regard. Questions related to this study can be sent to the REACH lab.

If you would like to learn more about emotion regulation, please read the following articles:

Gross, J. J., Richards, J. M., & John, O. P. (2006). Emotion regulation in everyday life. In D. K. Snyder, J. Simpson & J. N. Hughes (Eds.), *Emotion regulation in couples and families: Pathways to dysfunction and health* (pp. 13-35). Washington, DC: American Psychological Association.
<http://media.rickhanson.net/Papers/EmotRegDaily Life.pdf>

Rawana, J. S., Flett, G. L., McPhie, M. L., Nguyen, H. T., & Norwood, S. J. (2014). Developmental trends in emotion regulation: A systematic review with implications for community mental health. *Canadian Journal of Community Mental Health*, 33, 31-44.
<http://ezproxy.library.yorku.ca/login?url=http://search.proquest.com/docview/1606064480?accountid=15182>

Thank you.

Other Counselling Services in the GTA:

1. Toronto Psychological Services 416-531-0727 www.toronto-ps.com
2. Distress Centre of Toronto 416-408-4357 (HELP)
3. Help Line for All Youth HEYY 416-423-4399 (HEYY)
4. **Good 2 Talk (for post-secondary students)** 1-866-925-5454 <http://www.good2talk.ca/>
5. York University - Personal Counselling Services (PCS). Located in Counselling & Disability Services (CDS) in N110 Bennett Centre for Student Services, and can also be reached by phone at 416-736-5297 or <http://pcs.info.yorku.ca/in-case-of-crisis/>
6. The Freedom from Fear Foundation in Toronto is an organization established to help people with anxiety disorders. They have a network of support groups set up throughout Ontario 416-761-6006
7. Drug & Alcohol Registry of Treatment (DART)/Treatment info-line 1-800-565-8603
8. The National Eating Disorder Information Centre has a national register of private therapists, medical programs, and information 416-340-4156
9. Mood Disorders Association of Ontario 416-486-8046 OR call TOLL-FREE at 1-888-486-8236

10. A.C.C.E.S. (Accessible Community Counselling and Employment Services)
Toronto: 416-921-1800 Scarborough: 416-431-5326 Mississauga: 905-361-2522
11. Family Services Association of Toronto 416-595-9230
12. For a list of more health, social, community, and/or government community resources/services, you can access it via www.211toronto.ca or you can dial 2-1-1 in Toronto 24 hours a day. This phone number is free, confidential, and the trained staff is multilingual.

Appendix C

Demographics

1. What is your birth date? (e.g., January 1, 2006 = 01/06/2006) ____/____/____
2. Please indicate your sex (Check one) ☐ Male ☐ Female ☐ Intersex
3. What year of undergraduate studies are you in?
☐ 1st year
☐ 2nd year
☐ 3rd year
☐ 4th year
☐ Other. Please specify: _____
4. Where do you live?
☐ Parents/guardians home
☐ Residence
☐ Off campus
☐ Other. Please specify: _____
5. Please indicate your ethnicity (Check one)
☐ White/Caucasion
☐ Black
☐ Asian
☐ Aboriginal
☐ South-Asian
☐ Arab
☐ Latino-Hispanic
☐ Other: _____
6. Were you born in Canada? (check one) ☐ YES ☐ NO
 If “NO”: A) How long have you lived in Canada? _____ (years)
 B) What country were you born in? _____
7. What is your weight (in lbs.) _____
8. How tall are you without your shoes on?
 My height is _____ feet **and** _____ inches

Appendix D

Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following statements apply to you by recording the appropriate number from the scale below on the line beside each item.

1-----2-----3-----4-----5
 almost never sometimes about half the time most of the time almost always
 (0-10%) (11-35%) (36-65%) (66-90%) (91-100%)

- _____ 1) I am clear about my feelings.
- _____ 2) I pay attention to how I feel.
- _____ 3) I experience my emotions as overwhelming and out of control.
- _____ 4) I have no idea how I am feeling.
- _____ 5) I have difficulty making sense out of my feelings.
- _____ 6) I am attentive to my feelings.
- _____ 7) I know exactly how I am feeling.
- _____ 8) I care about what I am feeling.
- _____ 9) I am confused about how I feel.
- _____ 10) When I'm upset, I acknowledge my emotions.
- _____ 11) When I'm upset, I become angry with myself for feeling that way.
- _____ 12) When I'm upset, I become embarrassed for feeling that way.
- _____ 13) When I'm upset, I have difficulty getting work done.
- _____ 14) When I'm upset, I become out of control.
- _____ 15) When I'm upset, I believe that I will remain that way for a long time.
- _____ 16) When I'm upset, I believe that I will end up feeling very depressed.
- _____ 17) When I'm upset, I believe that my feelings are valid and important.
- _____ 18) When I'm upset, I have difficulty focusing on other things.
- _____ 19) When I'm upset, I feel out of control.
- _____ 20) When I'm upset, I can still get things done.
- _____ 21) When I'm upset, I feel ashamed at myself for feeling that way.
- _____ 22) When I'm upset, I know that I can find a way to eventually feel better.
- _____ 23) When I'm upset, I feel like I am weak.
- _____ 24) When I'm upset, I feel like I can remain in control of my behaviours.
- _____ 25) When I'm upset, I feel guilty for feeling that way.
- _____ 26) When I'm upset, I have difficulty concentrating.
- _____ 27) When I'm upset, I have difficulty controlling my behaviours.
- _____ 28) When I'm upset, I believe there is nothing I can do to make myself feel better.
- _____ 29) When I'm upset, I become irritated at myself for feeling that way.
- _____ 30) When I'm upset, I start to feel very bad about myself.
- _____ 31) When I'm upset, I believe that wallowing in it is all I can do.
- _____ 32) When I'm upset, I lose control over my behaviour.
- _____ 33) When I'm upset, I have difficulty thinking about anything else.
- _____ 34) When I'm upset I take time to figure out what I'm really feeling.
- _____ 35) When I'm upset, it takes me a long time to feel better.
- _____ 36) When I'm upset, my emotions feel overwhelming.

Appendix E

Emotion Regulation Questionnaire (ERQ)

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
1. When I want to feel more <i>positive</i> emotion (such as joy or amusement), I <i>change what I'm thinking about</i> .							
2. I keep my emotions to myself.							
3. When I want to feel less <i>negative</i> emotion (such as sadness or anger), I <i>change what I'm thinking about</i> .							
4. When I am feeling <i>positive</i> emotions, I am careful not to express them.							
5. When I'm faced with a stressful situation, I make myself <i>think about it</i> in a way that helps me stay calm.							
6. I control my emotions by <i>not expressing them</i> .							
7. When I want to feel more <i>positive</i> emotion, I <i>change the way I'm thinking</i> about the situation.							
8. I control my emotions by <i>changing the way I think</i> about the situation I'm in.							
9. When I am feeling <i>negative</i> emotions, I make sure not to express them.							
10. When I want to feel less <i>negative</i> emotion, I <i>change the way I'm thinking</i> about the situation.							

Appendix F

Flexible Regulation of Emotional Expression Scale (FREE)

Displaying emotion is a regular part of our daily lives. For social reasons, sometimes we have to express more emotion than we are feeling, and sometimes we have to display less emotion than we are feeling.

The following scenarios involve POSITIVE emotion. For each scenario, indicate how well you would be able to be even MORE EXPRESSIVE than usual of how you were feeling:

	Unable				Very able	
1) A friend wins an award for a sport that doesn't interest you.	1	2	3	4	5	6
2) A coworker gets a promotion and wants to talk about it.	1	2	3	4	5	6
3) A friend is talking about a great date she had the other night.	1	2	3	4	5	6
4) You receive a gift from a family member but it's a shirt you dislike.	1	2	3	4	5	6

The following scenarios involve NEGATIVE emotion. For each scenario, indicate how well you would be able to be even MORE EXPRESSIVE than usual of how you were feeling:

	Unable				Very able	
5) Your friend is telling you about what a terrible day they had.	1	2	3	4	5	6
6) Your boss is complaining about a project you know little about and have no involvement with.	1	2	3	4	5	6
7) A friend is talking about a break-up that you secretly think is a good thing.	1	2	3	4	5	6
8) You're attending the funeral of someone you don't know.	1	2	3	4	5	6

The following scenarios involve POSITIVE emotion. For each scenario, indicate how well you would be able to CONCEAL how you were feeling:

	Unable			Very able		
9) While having dinner with a friend who has just recently lost their job, you receive a phone call from your boss stating you will get a raise.	1	2	3	4	5	6
10) You are in a training session and you see an accidentally funny typo in the presenter's slideshow.	1	2	3	4	5	6
11) You're a guest at a solemn religious ceremony and the person sitting next to you just whispered a funny joke.	1	2	3	4	5	6
12) During a meeting with a supervisor, his/her phone unexpectedly begins to play an embarrassing ringtone.	1	2	3	4	5	6

The following scenarios involve NEGATIVE emotion. For each scenario, indicate how well you would be able to CONCEAL how you were feeling:

	Unable			Very able		
13) You are at a social event and the person you're talking to frequently spits while they speak.	1	2	3	4	5	6
14) You have just heard about the death of a close relative right before an important work meeting.	1	2	3	4	5	6
15) You are on a first date at a restaurant having dinner, and a stranger spills their drink on you.	1	2	3	4	5	6
16) After you have a very irritating and stressful day, a sometimes-annoying neighbor stops by to say hello.	1	2	3	4	5	6

Appendix G

Center for Epidemiologic Studies Depression Scale, Revised (CESD-R)

Below is a list of the ways you might have felt or behaved. Please indicate how often you have felt this way **during the past week**.

	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most of or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	1	2	3	4
2. I did not feel like eating; my appetite was poor.	1	2	3	4
3. I felt like I could not shake off the blues even with help from my family or friends.	1	2	3	4
4. I felt I was just as good as other people.	1	2	3	4
5. I had trouble keeping my mind on what I was doing.	1	2	3	4
6. I felt depressed.	1	2	3	4
7. I felt that everything I did was an effort.	1	2	3	4
8. I felt hopeful about the future.	1	2	3	4
9. I thought my life had been a failure.	1	2	3	4
10. I felt fearful.	1	2	3	4
11. My sleep was restless.	1	2	3	4
12. I was happy.	1	2	3	4
13. I talked less than usual.	1	2	3	4
14. I felt lonely.	1	2	3	4
15. People were unfriendly.	1	2	3	4
16. I enjoyed life.	1	2	3	4
17. I had crying spells.	1	2	3	4
18. I felt sad.	1	2	3	4
19. I felt that people disliked me.	1	2	3	4
20. I could not get "going".	1	2	3	4

Appendix H

Spielberger State-Trait Anxiety Inventory Six-Item Short Form (STAI-Y-6)

A number of statements which people have used to describe themselves are below. Read each statement and select the response that indicates **how you feel right now, at this moment**. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not At All	Somewhat	Moderately	Very much
1. I feel calm	1	2	3	4
2. I am tense	1	2	3	4
3. I feel upset	1	2	3	4
4. I am relaxed	1	2	3	4
5. I feel content	1	2	3	4
6. I am worried	1	2	3	4

Appendix I

Eating Attitudes Test (EAT-26)

We would like to ask you some questions about your eating behaviours. Please answer as accurately, honestly and completely as possible. There are no right or wrong answers.

	Always	Usually	Often	Sometimes	Rarely	Never
1. I am terrified about being overweight.						
2. I avoid eating when I am hungry.						
3. I find myself preoccupied with food.						
4. I have gone on eating binges where I feel that I may not be able to stop.						
5. I cut my food into small pieces.						
6. I am aware of the calorie content of foods that I eat.						
7. I particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)						
8. I feel that others would prefer if I ate more.						
9. I vomit after I have eaten.						
10. I feel extremely guilty after eating.						
11. I am occupied with a desire to be thinner.						
12. I think about burning up calories when I exercise.						
13. I other people think that I am too thin.						
14. I am preoccupied with the thought of having fat on my body.						
15. I take longer than others to eat my meals.						
16. I avoid foods with sugar in them.						
17. I eat diet foods.						
18. I feel that food controls my life.						
19. I display self-control around food.						
20. I feel that others pressure me to eat.						
21. I give too much time and thought to food.						
22. I feel uncomfortable after eating sweets.						
23. I engage in dieting behavior.						
24. I like my stomach to be empty.						
25. I have the impulse to vomit after meals.						
26. I enjoy trying new rich foods.						

	Never	Once a month or less	2-3 times a month	Once a week	2-6 times a week	Once a day or more
A. Gone on eating binges where you feel that you may not be able to stop? (<i>Defined as eating much more than most people would under the same circumstances and feeling that eating is out of control.</i>)						
B. Ever made yourself sick (vomited) to control your weight or shape?						
C. Ever used laxatives, diet pills or diuretics (water pills) to control your weight or shape?						
D. Exercised more than 60 minutes a day to lose or to control your weight?						

	Yes	No
E. Lost 20 or more pounds in the past 6 months?		
F. Have you ever been treated for an eating disorder?		

Appendix J

Subjective Happiness Scale (SHS)

For each of the following statements and/or questions, please circle the point on the scale that you feel is most appropriate in describing you.

1. In general, I consider myself:

1	2	3	4	5	6	7
Not a very happy person						A very happy person

2. Compared to most of my peers, I consider myself:

1	2	3	4	5	6	7
Less happy						More happy

3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

1	2	3	4	5	6	7
Not at all						A great deal

4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

1	2	3	4	5	6	7
Not at all						A great deal

Appendix K

Mental Health Continuum Short Form (MHC-SF)

Please answer the following questions are about how you have been feeling **during the past month**. Indicate how often you have experienced or felt the following:

During the past month, how often do you feel...	Never	Once or twice	About once a week	About 2 or 3 times a week	Almost every day	Every day
1. happy						
2. interested in life						
3. satisfied with life						
4. that you had something important to contribute to society						
5. that you belonged to a community (like a social group, or your neighbourhood)						
6. that our society is a good place, or is becoming a better place, for all people						
7. that people are basically good						
8. that the way our society works makes sense to you						
9. that you liked most parts of your personality						
10. good at managing the responsibilities of your daily life						
11. that you had warm and trusting relationships with others						
12. that you had experiences that challenged you to grow and become a better person						
13. confident to think or express your own ideas and opinions						
14. that your life has a sense of direction or meaning to it						